AROUSAL BIAS: IF IT LOOKS BAD, DOES IT FEEL BAD?

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INTRODUCTION

•In this study, we explored how evaluative differences when rating emotional stimuli translates into differences in physiological defensive reactivity and/or threshold of activation. In general, people's ratings of pleasure and arousal are linearly uncorrelated but show a quadratic correlation, with both pleasant and unpleasant pictures rated as higher in arousal (indicating greater activation), compared to neutral pictures.

•We examined an individual difference factor of "arousal bias," that is, the tendency for some people to associate greater arousal with unpleasant stimuli, and others to associate arousal with pleasant content. Will a person who tends to categorize unpleasant stimuli in the environment as more arousing than pleasant events, differ from those who primarily find pleasant situations arousing?

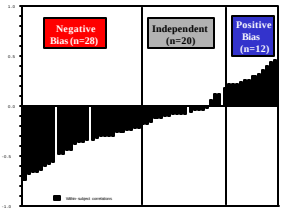
METHOD

•Participants were 60 students; 56 pictures were selected from the IAPS (Lang et al., 1999) and were chosen to comprise 3 levels of arousal (low, moderate, high) for pleasant and unpleasant content.

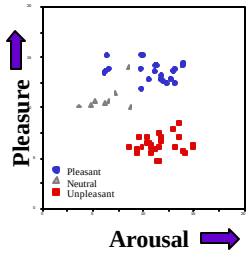
•Corrugator EMG, skin conductance, and heart rate activity were measured during picture viewing; acoustic startle probes were presented during each picture. Following a 6 -s picture presentation, the participant rated each picture on the dimensions of pleasure and arousal.

AROUSAL BIAS

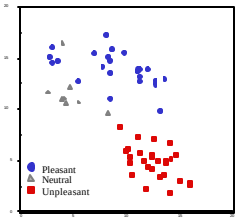
•For each individual,the linear correlation between pleasure and arousal ratings was computed.



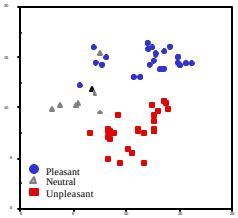
INDEPENDENT



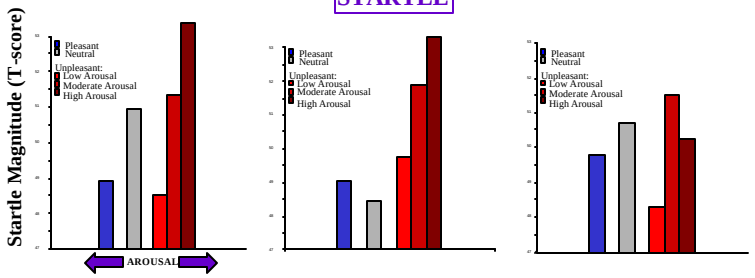
NEGATIVE BIAS



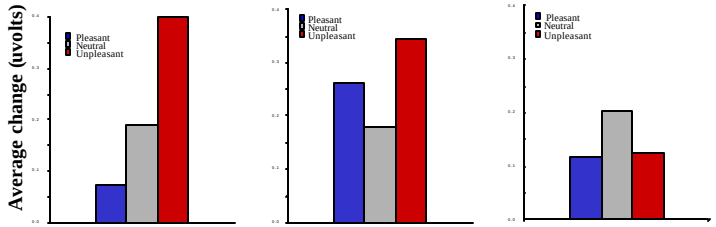
POSITIVE BIAS



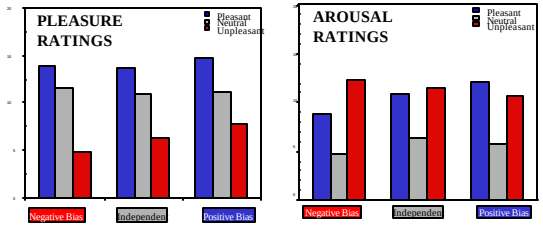
STARTLE



CORRUGATOR EMG



SAM RATINGS



For the startle reflex, a main effect of picture valence was observed (p =.028), as expected.

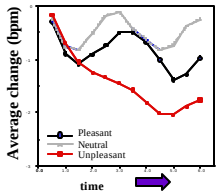
The Independent Group exhibited increased potentiation of the startle reflex when viewing unpleasant, compared to pleasant pictures (linear trend, p = .006) with the largest responses to the most arousing unpleasant content (main arousal effect, p = .005, linear trend, p = .001).

The Negative Bias Group showed increased startle potentiation when viewing unpleasant, compared to pleasant and neutral pictures (linear trend, p = .001) with greatest response to highly arousing unpleasant pictures (main arousal effect, p = .010, linear trend, p = .006).

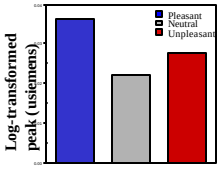
For the Positive Bias Group, the startle reflex did not differ when viewing emotional and neutral pictures.

For corrugator EMG activity, a main effect of picture valence was observed (p = .046). **The Independent Group** exhibited increased corrugator activity when viewing unpleasant pictures (main effect of valence, p = .003; linear trend, p = .002).
The Negative Bias Group showed increased activity to both pleasant and unpleasant pictures (main valence effect, p = .045; quadratic trend, p = .019).
For the Positive Bias Group, corrugator EMG activity did not significantly differ when viewing emotional and neutral pictures.

HEART RATE



SCR



For heart rate, a main effect of valence indicated more cardiac deceleration when viewing unpleasant pictures. For SCR a main effect of picture valence was observed (p = .028), with larger SCRs to emotional pictures, compared to neutral pictures (quadratic trend, p = .041).There were no significant effects of BIAS on either measure.

Pleasure ratings : A main effect for picture valence was observed (p = .030). A Bias main effect (p = .000) and a Bias by Valence interaction (p = .001) revealed that Negative Bias participants assigned higher ratings of displeasure to unpleasant pictures, as compared to **Independent** and Positive Bias participants (linear trend, p = .000).
Arousal ratings: A main effect for picture valence was observed (p =.000). A Bias by Valence interaction (p =.000) revealed that Negative Bias participants assigned larger arousal ratings to unpleasant pictures, as compared to pleasant pictures (linear trend, p = .001), and Positive Bias participants rated pleasant pictures as more arousing than unpleasant pictures (linear trend, p = .032).
Independent participants rated emotional contents similarly and more arousing than neutral pictures.

CONCLUSIONS

•These findings suggest that individual differences in "arousal bias" modulate physiological reactions to affective content. Measures of physiological orienting (e.g., heart rate and skin conductance responses) suggested there were no group differences in sensory intake during picture processing. However, evaluative judgments and physiological measures indicated greater defensive activation for Negative Bias and **Independent** participants when viewing unpleasant content whereas Positive Bias individuals did not show defensive activation to the same content nor did they rate these materials as arousing. On the average, negative bias and individual participants responded similarly. However, negative bias participants were more likely to rate the unpleasant pictures as more arousing and they also displayed negative facial emotions to pleasant content. These data are consistent with a recent study by Sloan et. al (2002) who found increased corrugator activity when dysphoric participants viewed pleasant faces.
•Taken together, the findings have implications for assessment and treatment in clinical populations (e.g., patients who endorse "negative cognitive distortions "), particularly in terms of physiological reactivity to unpleasant environmental events. Conversely, those individuals who view emotional content as less arousing may be less defensively engaged and thus 'blunted ' in their physiological reactions.

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